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4 BILL NO. S-77-07-17

5 SPECIAL ORDINANCE NO. S- 153-77

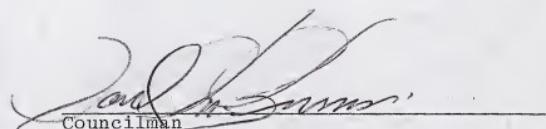
6 AN ORDINANCE approving a contract with
7 Cues, Inc. for materials for Water
Pollution Control Engineering.

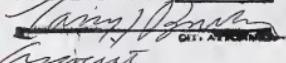
8 BE IT ORDAINED BY THE COMMON COUNCIL OF THE CITY OF
9 FORT WAYNE, INDIANA:

10 SECTION 1. That the contract dated June 22, 1977,
11 between the City of Fort Wayne, by and through its Mayor and the
12 Board of Public Works and Cués, Inc., for:

13 1 Internal T. V. Inspection and Grouting
14 Unit - Less trade-in \$41,670.00
15 all as more particularly set forth on City Utilities Purchase
16 Order No. 9038, which is on file in the Office of the Department
17 of Purchasing and is by reference incorporated herein, made a
18 part hereof and is hereby in all things ratified, confirmed and
19 approved.

20 SECTION 2. This Ordinance shall be in full force and
21 effect from and after its passage and approval by the Mayor.
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Carl R. Johnson
Councilman

34 ' APPROVED AS TO FORM
35 AND LEGALITY,

Harry J. Brown
Attorney

Read the first time in full and on motion by Burns, seconded by

Hager, and duly adopted, read the second time by title and referred to the Committee on City Utilities (and the City Plan Commission for recommendation) and Public Hearing to be held after due legal notice, at the Council Chambers, City-County Building, Fort Wayne, Indiana, on _____, the _____ day of _____, 19_____, at _____ o'clock M., E.S.T.

DATE: 7-12-77

Charles W. Westerman
CITY CLERK

Read the third time in full and on motion by Burns, seconded by Hunter, and duly adopted, placed on its passage.

PASSED (YEST) by the following vote:

	<u>AYES</u>	<u>NAYS</u>	<u>ABSTAINED</u>	<u>ABSENT</u>	<u>TO-WIT:</u>
<u>TOTAL VOTES</u>	<u>9</u>	_____	_____	_____	_____
<u>BURNS</u>	<u>✓</u>	_____	_____	_____	_____
<u>HINGA</u>	<u>✓</u>	_____	_____	_____	_____
<u>HUNTER</u>	<u>✓</u>	_____	_____	_____	_____
<u>MOSES</u>	<u>✓</u>	_____	_____	_____	_____
<u>NUCKOLS</u>	<u>✓</u>	_____	_____	_____	_____
<u>SCHMIDT, D.</u>	<u>✓</u>	_____	_____	_____	_____
<u>SCHMIDT, V.</u>	<u>✓</u>	_____	_____	_____	_____
<u>STIER</u>	<u>✓</u>	_____	_____	_____	_____
<u>TALARICO</u>	<u>✓</u>	_____	_____	_____	_____

DATE: 7-26-77

Charles W. Westerman
CITY CLERK

Passed and adopted by the Common Council of the City of Fort Wayne, Indiana, as
(ZONING MAP) (GENERAL) (ANNEXATION) (SPECIAL) (APPROPRIATION) ORDINANCE

(RESOLUTION) No. S-153-77 on the 26th day of July, 1977.
ATTEST: (SEAL)

Charles W. Westerman
CITY CLERK

John Nuckles
PRESIDING OFFICER

Presented by me to the Mayor of the City of Fort Wayne, Indiana, on the 27th
day of July, 1977, at the hour of 3:00 o'clock S M., E.S.T.

Charles W. Westerman
CITY CLERK

Approved, and signed by me this 27th day of July, 1977,
at the hour of 5:00 o'clock S M., E.S.T.

Ralph Elmhurst
MAYOR

Bill No. S-77-07-17

REPORT OF THE COMMITTEE ON CITY UTILITIES

We, your Committee on City Utilities to whom was referred an Ordinance
approving a contract with Cues, Inc. for materials for Water Pollution
Control Engineering

have had said Ordinance under consideration and beg leave to report back to the Common
Council that said Ordinance do PASS.

PAUL M. BURNS - CHAIRMAN

FREDRICK R. HUNTER - VICE CHAIRMAN

VIVIAN G. SCHMIDT

WINFIELD C. MOSES, JR.

JAMES S. STIER

CONCURRED IN
DATE 7-26-77 CHARLES W. WESTERMAN, CITY CLERK

Memorandum

To H. P. Wehrenberg, Board of Works

Date June 22, 1977

From Ruth Winget, Purchasing Department

Subject Bid Reference #423 - T. V. Unit

COPIES TO:

J. F. Morreale
P. Boller
T. Pallone

Enclosed you will find (Bid Ref. No. 423) relating to Purchase Order No. 9038 prepared favoring Cues, Inc. for one (1) Internal T. V. Inspection and Grouting Unit for Water Pollution Control Engineering Department.

Five (5) vendors were invited to bid. Two (2) bids were returned with Cues, Inc. being the lowest.

We recommend that the bid for the Internal T. V. Inspection and Grouting Unit be awarded to Cues, Inc. It was determined that certain items of the grouting unit were not necessary at this time. Individual cost of these items, listed on the itemized bid sheets, have been deducted from the grouting equipment base bid. A tabulation showing the breakdown of the bids are attached. Thus, the total net price of the bid submitted by Cues, Inc. is \$41,670.00.

Attached are the following documents in support of the recommendation for acceptance of Cues, Inc. bid:

1. Bid Tabulation Sheets
2. Memorandum from W.P.C. Engineering Department
3. Copies of Vendor's Bids
4. Purchase Order No. 9038

It is urged that in referring this bid-quote to the City Council for enactment of an ordinance, that all of the attached items, together with this memorandum (or copies), be included with the proposed ordinance.

Please make sure that no confirming Purchase Order Number (s) is given to Cues, Inc. until evidence of Council approval is furnished to the Purchasing Department.

R.A. Winget
R. A. Winget

Approved:

A.C. Lord
A. C. Lord

64-283-11
6/27/77

WPC Engineering Dept. Internal TV Inspection & Grouting Unit

Bid Reference No. 423Date April 5, 1977

Vendors Name & Address

Cues Inc.
3501 Vineland Road
P.O. BOX 5516
Orlando, Florida 32805

Municipal & Contractor Supply, Inc.
P.O. BOX 3006
Lexington, Ohio 44904

Halliburton Services
P.O. BOX 331
Albion, Michigan 49224

United Survey, Inc.
25145 Broadway
Cleveland, Ohio

O'Brien Enterprises, Inc.
1702 Delogier Drive
Glenview, Illinois 60025

Cards Mailed

Bids Picked Up

Bids Mailed

April 5, 1977

Memorandum

To A.C. Lord, Director of Purchases

Date 6/21/77

From Philip R. Boller, Chief Water Pollution Control Eng.

Subject Internal Inspection and Grouting Unit Bids

COPIES TO:

Bd. of P. Works

Joe Morreale

Howard Biggs

Ralph Barnett

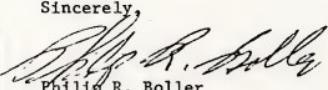
File

The Bids for the above mentioned unit, which were opened on May 3, 1977 in your department, have been reviewed by this department. Additional information was requested by this department from Cues, Inc. on May 26, 1977 and it was received from them on June 10, 1977.

We recommend that the bid for the internal inspection and grouting unit be awarded to Cues, Inc. Funds are available for this item from Federal Grant No. C-180775-01. It was determined that certain items of the grouting equipment were not necessary at this time. The individual cost of these items, which were listed on the itemized bid sheets, have been deducted from the respective grouting equipment base bids. A bid tabulation sheet showing the breakdown of the bids is attached. Thus the total net price of the bid submitted by Cues, Inc., is \$41,670.00.

If any further information is necessary feel free to contact Tom Pallone, Project Engineer of this department or the undersigned.

Sincerely,



Philip R. Boller

PRB/TP/ds

Att.

RECEIVED
PURCHASING DEPT.

JUN 21 1977
AM 7:8; PM 1:2; 3; 4; 5; 6

BID TABULATION SHEET
FOR
INTERNAL INSPECTION AND GROUTING UNIT
BIDS RECEIVED May 3, 1977

<u>ITEM</u>	<u>CUES INC.</u>	<u>HALLIBURTON SERVICES</u>
Base Bid A Internal Inspection Truck	\$41,383.00	\$41,935.00
Base Bid B Grouting Equipment	14,397.00	15,941.00
Deduct of Certain Grouting Equipment	4,110.00	3,472.00
Net Base Bid B	10,287.00	12,469.00
Total Net Base Bid	51,670.00	54,404.00
Less Trade-In	10,000.00	2,500.00
Total Net Price	41,670.00	51,904.00
Delivery Time	120 days	150 days



THE CITY OF FORT WAYNE

CITY-COUNTY BUILDING • ONE MAIN STREET • FORT WAYNE, INDIANA 46802
engineering department
7th floor

May 26, 1977

CUES
3501 Vineland Road
P.O. Box 5516
Orlando, Florida 32805

Attention: Walter Huber

Subject: Bid for Internal Inspection and Grouting Unit

Gentlemen:

You are the apparent low bidder for the Internal Inspection and Grouting Unit as bid May 2, 1977. However, we need clarification and assurances on the following parts of the specifications:

1. Section I, paragraph 1.04 WARRANTY.
Please give clarification of the complete details of the warranty.
2. Section I paragraph 1.10 TRAINING
Give an assurance that during the warranty period highly qualified instructors shall be available to train the employees of the "OWNER" in situations that could not be anticipated during the normal training session.
3. BID SHEET
Give the prices of grout for the calendar year 1978.
4. Section II paragraph 2.01 CHASSIS SPECIFICATIONS
Give an assurance that the cooling system shall be protected with permanent type anti-freeze to -20° fahrenheit.
Give an assurance that the internal inspection and grouting operations shall be able to be accomplished with the main rear doors closed.

5. Section V paragraph 5.08 EQUIPMENT COMPARTMENTS
Give assurance that consideration shall be given to utilization
of all available space for the storage of equipment.

After you submit this information we will then be able to further review
the bids.

Sincerely,



Philip R. Boller, P.E.
Chief Water Pollution Control Engineer

cc: Board of Public Works
Purchasing Department ✓
Howard Biggs, City Engineer
File

RECEIVED
PURCHASING DEPT.

AM MAY 27 1977 PM
7,8,9,10,11,12,1,2,3,4,5,6

**CITY OF FORT WAYNE
CITY UTILITIES**

DEPARTMENT OF PURCHASES
ROOM 950 CITY-COUNTY BUILDING
NUMBER ONE EAST MAIN STREET
FORT WAYNE, INDIANA 46802

64-283-19
ORIGINAL PURCHASE ORDER NO. 9038

6/27/77

This number must appear on each package, packing slip, invoice, bill of lading, express receipt and correspondence.

DATE June 22, 1977

Cues, Inc.
3501 Vineland Road
Orlando, Florida 32805

SHIP TO —

Water Pollution Control Engineering
7th Floor, City County Bldg.
Fort Wayne, Indiana 46802

MAIL ALL INVOICES TO —
CITY UTILITIES

GENERAL ACCOUNTING
4th FLOOR CITY-COUNTY BUILDING
NUMBER ONE EAST MAIN STREET
FORT WAYNE, INDIANA 46802

INVOICE IN DUPLICATE, INCLUDING
CERTIFICATION AS REQUIRED BY
INDIANA STATE BOARD OF ACCOUNTS

QUANTITY RECEIVED	QUANTITY ORDERED	DESCRIPTION	ACCT. OR W.O. NO.	UNIT PRICE	TOTAL
1		Internal T. V. Inspection and Grouting Unit - Less trade-in For S. S. E. S. Project <i>PPW</i> Per Bid Ref. #423 Terms N/A 75% Federal Funding Ship: 120 days after Receipt of Award	79003-F		\$ 41,670.00

SUBJECT TO COUNCILMANIC APPROVAL

APPROVED
Board of Public Works

Henry P. Wahrenberg
Edna H. LaMar
May G. Scott

ATTENTION!

Send all Invoices to General Accounting
4th Floor, City-Cnty Bldg.
1 E. Main St.
Fort Wayne, Indiana 46802
Show P. O. Number on Packing Slip
and Invoice.

RW/pl #50-S-77

NOTE: TERMS OF PAYMENT MUST BE SHOWN ON FACE OF INVOICE, OTHERWISE A 2% CASH DISCOUNT WILL BE TAKEN

BY

CITY UTILITIES PURCHASING AGENT

SUBJECT TO CONDITIONS ON REVERSE SIDE

City Utilities

PURCHASE REQUISITION

Date MARCH 30, 77

Please order the following Material for Delivery as Specified:

To be delivered to W. P. C. ENG. DEPT.

On or before 1st flr.

Cres, Inc.
3501 Vineland Rd.
Orlando, Fla.

32805

Req. No. 50-S-77

P. O. No. 9038

QUANTITY	DESCRIPTION	DIST. NO.	DEPARTMENT ESTIMATED COST
1	INTERNAL INSPECTION AND GROUTING UNIT PER SPILLER ETC.	1	1
	ENG. DEPT. Lease trade-in FOR		\$44,670.00
	S. S. E. S. PROJECT		

CHARGE W. O. #79003-F

Per Bid Ref. #423

RECEIVED	Terms N/A
MAR 31 1977	75% Federal Funding
CITY UTILITIES GEN. SUPT. OFFICE	Ship 120 days after Receipt of Payment

REMARKS:

Subject to Councilmanic Approval.

I hereby certify that the work or supplies above specified
are necessary for stock or use in this department.

Department

W.P.C. ENG.

Rw

Dept. Head

Charge Light

Water

Sewage

✓

Day _____ Month _____ Year _____
Number One Main St., Ft. Wayne, Ind. 46802

INVITATION

Quotations, subject to the conditions on the reverse hereof, are requested on the following list of materials, supplies, equipment or services, for the department as mentioned, with delivery to destination as shown below. Quotations shall include all charges for delivery, packing, etc. Address your reply as illustrated below.

*Mail all replies and correspondence, via. to Attn of A. C. Lord 423-7037 DEPARTMENT OF PURCHASES

Room 470, Number One Main St., Ft. Wayne, Ind. 46802

Address REQUIRED FOR DELIVERY TO:

Department Water Pollution Control Engineering Department
or Division 7th Floor, City County Bldg., One Main Street
Address Fort Wayne, Indiana 46802

Fund Federal Fund
Appropriation No. _____

RETURN ORIGINAL TO THE CITY—RETAIN DUPLICATE COPY FOR YOUR FILE

Closing

Time of Bids TUESDAY, MAY 3, 1977 at 11:00 A.M.

TAXES: THE CITY IS EXEMPT FROM FEDERAL EXCISE AND INDIANA STATE SALES TAX. THIS CITY'S INDIANA SALES TAX EXEMPTION CERTIFICATE NUMBER IS NO. 24508. PRICES SHOULD NOT INCLUDE THESE TAXES. See "Instructions to Bidders" No. 10 on reverse hereof for details.

TAX EXEMPT (Unless otherwise indicated)

Quantity	Unit	Materials, Supplies, Equipment or Services	Unit Price	Amount
1		Internal TV Inspection & Grouting Unit per Specifications attached.	\$ 57,876.	\$ 57,876.
		The enclosed Non-Collusion Affidavit must be properly executed and returned as part of your bid.		
		Trade-In shall be available for inspection by appointment. Contact Water Pollution Control Engineering Department (219) 423-7061 at least 48 hours in advance.		

Bid Bond required NO 5% of Bid Performance Bond NO 100%

See Instruction Item No. 18 on reverse side hereof.

Terms Net % cash discount if paid within days from delivery and acceptance of goods or completion of services.

PROPOSAL OR BID

In compliance with the above invitation for bids and subject to all conditions hereof, the undersigned offers and agrees, if this bid be accepted, within a reasonable time from date of closing, to furnish any or all of the items or render such services upon which prices are quoted, in accordance with the specifications, pricing and all the terms set opposite each item.

Delivery of any or all of the items or completion of services indicated shall be made within 150 days from receipt of order.

IMPORTANT

As delivery may be a deciding factor in the award of an order, it is important that bidders furnish the information requested above.

Done this

Halliburton Services

Gregory M. Rogers Manager of Contracts

District Engineer

P.O. Box 331 Albion, Michigan 49221

City Albion, Michigan 49221 5-1-77

Page 1 of 1

Ref. No. 423

Date April 5, 1977

Date wanted _____

BID SHEET

for

INTERNAL INSPECTION AND GROUTING UNIT

CITY UTILITIES

CITY OF FORT WAYNE, INDIANA

<u>Description</u>	<u>Amount</u>
A. Base bid of internal inspection truck (per Sections II, III, and V of these specifications)	<u>\$ 41,935.00</u>
B. Base bid of grouting equipment (per Section IV of these specifications)	<u>\$ 15,941.00</u>
TOTAL BASE BID	<u>\$ 57,876.00</u>
C. Less Trade-in allowance for existing T.V. Truck (per Section VI of these specifications)	<u>\$ 2,500.00</u>
TOTAL BASE BID LESS TRADE-IN	<u>\$ 55,376.00</u>

The fixed prices for the grout chemicals and cleaning agents which will be ordered during the warranty period are attached.

The BIDDERS guaranteed delivery date for this unit complete is:

The _____ day of _____, 1977.

For 1977 Van - 150 days after receipt of order.

DEPARTMENT OF PURCHASES
Number One Main St., Ft. Wayne, Ind. 46802

INVITATION

Conditions, subject to the conditions on the reverse hereof, are requested on the following list of materials, supplies, equipment or services, for the department as mentioned, with delivery to destination as shown below. Conditions shall include all charges for delivery, packing, etc. Address your reply as indicated below.

Mall all replies and correspondence, etc. to Attn of A. C. Lord 423-7037 DEPARTMENT OF PURCHASES

Room 470, Number One Main St., Ft. Wayne, Ind. 46802

REQUIRED FOR DELIVERY TO:

Department or Division Water Pollution Control Engineering Department
Address 7th Floor, City County Bldg., One Main Street
Fort Wayne, Indiana 46802

RETURN ORIGINAL TO THE CITY—RETAIN DUPLICATE COPY FOR YOUR FILE

Closing

Time of Bids TUESDAY, MAY 3, 1977 at 11:00 A.M.

TAX IS THE CITY IS EXEMPT FROM FEDERAL EXCISE AND INDIANA STATE SALES TAX. THE CITY'S INDIANA SALES TAX EXEMPTION CERTIFICATE NUMBER IS NO. 24508. PRICES SHOULD NOT INCLUDE TAXES TAKEN. See "Instructions to Bidders" No. 10 on reverse hereof for details.

TAX EXEMPT (Unless otherwise indicated)

Quantity	Unit	Description	Unit Price	Total Amount
1		Internal TV Inspection & Grouting Unit per Specifications attached.		55,780.00
		The enclosed Non-Collusion Affidavit must be properly executed and returned as part of your bid.		
		Trade-In shall be available for inspection by appointment. Contact Water Pollution Control Engineering Department (219) 423-7061 at least 48 hours in advance.		10,000.00 45,780.00

BID Bond required Y N of Bid Performance Bond Y N 100%
See Instructions Item No. 14 on reverse side hereof.

Terms N/A % cash discount if paid within days from delivery and acceptance of goods or completion of services.

Terms: Net 30 days

In compliance with the above invitation for bids and subject to all conditions thereto, the undersigned offers and agrees, if this bid be accepted within a reasonable time from date of delivery, to furnish, pay or do all of the items or render such services upon which prices are quoted, in accordance with the specifications, drawing and all other prints and schedules each item.

Delivery of any or all of the items or completion of services indicated shall be made within 20 days from receipt of order.

IMPORTANT

As delivery may be a dubbing factor in the award of an order, it is important that bidders furnish the information requested above.

CUES, INC.

Walter F. Huber President Asst. Vice Pres.

Walter F. Huber
Address: 3501 Vineland Road
Orlando, Fla. 32805

4/26/77

Page 1 of 4
Ref. No. 433
Date April 5, 1977
Date wanted _____

Fund Federal Fund
Appropriation No. _____

BID SHEET

for

INTERNAL INSPECTION AND GROUTING UNIT

CITY UTILITIES

CITY OF FORT WAYNE, INDIANA

<u>Description</u>	<u>Amount</u>
A. Base bid of internal inspection truck (per Sections II, III, and V of these specifications)	\$41,383.00
B. Base bid of grouting equipment (per Section IV of these specifications)	14,397.00
TOTAL BASE BID	55,780.00
C. Less Trade-in allowance for existing T.V. Truck (per Section VI of these specifications)	10,000.00
TOTAL BASE BID LESS TRADE-IN	\$45,780.00

The fixed prices for the grout chemicals and cleaning agents which will be ordered during the warranty period are attached.

The BIDDERS guaranteed delivery date for this unit complete is:

The _____ day of _____, 1977.

120 days after receipt of award

SPECIFICATIONS
FOR
INTERNAL INSPECTION AND GROUTING UNIT

CITY UTILITIES
CITY OF FORT WAYNE, INDIANA

APRIL 1, 1977

Prepared by
WATER POLLUTION CONTROL ENGINEERING DEPARTMENT
ONE MAIN STREET
FORT WAYNE, INDIANA 46802

I N D E X

SECTION I - GENERAL PROVISIONS AND REQUIREMENTS

- 1.01 Scope
- 1.02 Materials and Workmanship
- 1.03 Experience
- 1.04 Warranty
- 1.05 Parts and Service
- 1.06 Patents
- 1.07 Bid
- 1.08 Terms of Payment
- 1.09 Delivery
- 1.10 Training
- 1.11 Operation and Maintenance Manuals
- 1.12 Internal Inspection Logs
- 1.13 Bid Award
- 1.14 Trade-in Unit
- 1.15 Information to Accompany Bid
- 1.16 Shop Drawings
- 1.17 Bid Sheets

SECTION II - VAN-TYPE TRUCK REQUIREMENTS

- 2.01 Chassis Specifications
- 2.02 Body Specifications
- 2.03 Interior Compartments and Outfitting
- 2.04 Placement of Equipment and Controls

SECTION III - INTERNAL INSPECTION SYSTEM

- 3.01 TV Camera
- 3.02 TV Power & Light Control Unit
- 3.03 Monitor
- 3.04 Video Tape Recording System
- 3.05 Data View
- 3.06 TV Cable Reel Assembly
- 3.07 Footage Meter
- 3.08 Camera Storage Box

SECTION IV - INTERNAL GROUTING SYSTEM

- 4.01 Scope
- 4.02 Grout Material
- 4.03 Grout Pump
- 4.04 Air Motor Kit
- 4.05 Grout Tanks
- 4.06 Air-Grout Hose Reel Assembly
- 4.07 Remote Grout Nozzle System
- 4.08 Grouting Control Panel

SECTION V - MISCELLANEOUS EQUIPMENT

- 5.01 110 Volt Electrical System
- 5.02 Air System
- 5.03 Joint Test System
- 5.04 Water System
- 5.05 Phone System
- 5.06 Towing Assembly

- 5.07 Sewer Plugs
- 5.08 Equipment Compartments
- 5.09 Polariod Camera Assembly
- 5.10 TV Camera Skid Assembly
- 5.11 Safety Equipment
- 5.12 Maintenance Tool Box
- 5.13 Cable Repair Kit

SECTION VI - EQUIPMENT LIST OF OPTIONAL TRADE-IN TRUCK

SECTION I - GENERAL PROVISIONS AND REQUIREMENTS

1.01 SCOPE

It is the intent of these specifications to secure a unit ready for use in internally inspecting and grouting sewer lines for the City Utilities of the City of Fort Wayne, Indiana, hereinafter referred to as the "OWNER". The unit shall consist of a complete closed circuit television system to enable the "OWNER" to inspect sewer lines of 8,10,12,15,18,21,24,27 and 30 inches inside diameter, and all chemical grout storing, mixing and placing equipment necessary to internally grout sewer lines of 8,10,12, 15,18,21,24,27, and 30 inches inside diameter mounted in a self-contained van type truck.

1.02 MATERIALS AND WORKMANSHIP

All equipment, materials, and parts comprising the unit herein specified, shall be new and unused, of correct manufacture and of the highest grade, free from all defects or imperfections affecting performance, workmanship, shall be of the highest grade in accordance with modern practice.

1.03 EXPERIENCE

The internal inspection and grouting unit described herein shall be supplied by one manufacturer, hereinafter referred to as the "BIDDER", who is regularly engaged in the design, manufacture and supply of this type of equipment. In order to be considered as a qualified "BIDDER" the supplier must have sold and serviced this type of unit to municipalities and/or contractors for a period over the last five (5) years.

A list must be submitted with the bid of at least ten (10) owners within the same general climatic condition of Fort Wayne, Indiana, who have purchased from the "BIDDER" an internal inspection and grouting unit similar to the unit described herein. Three (3) of the owners on the list must be municipalities.

1.04 WARRANTY

All equipment, materials, and items comprising the total internal inspection and grouting unit described herein shall be covered by the manufacturer's and/or supplier's warranty to be free from defects of workmanship and materials for a period of one (1) year from the date of delivery of the unit to the "OWNER". All warranty repairs, labor and/or replacements shall be made by supplier at its factory, service center, or as otherwise authorized by the supplier in writing, with all necessary transportation charges both to and from the "OWNER" being paid by the "BIDDER."

1.05 PARTS AND SERVICE

In order to best serve the needs of the "OWNER" during and especially after the warranty period, it is the intention of these specifications to secure for the "OWNER" a complete unit which can be properly maintained and serviced without the necessity of the purchaser maintaining an expensive parts stock, or being subjected to long periods of interrupted service due to lack of spare parts or service on these units requiring other than "OWNER" servicing.

1.05 PARTS AND SERVICE - continued

The "BIDDER" is asked to list the location of the nearest permanent parts and grout supply to Fort Wayne, Indiana, a depot from which required parts and grout may be obtained in necessary quantities at any time, and the facility nearest to Fort Wayne, Indiana, equipped to service the specialized equipment contained in the unit. The "BIDDER" is also asked to guarantee that the parts and service facilities mentioned above will remain at the same location for a minimum period of five (5) years after the date of delivery of the complete unit described herein. This service facility shall be such that normal maintenance can be performed within a period of 48 hours. If such maintenance should require more than 48 hours, then at the "OWNERS" option, a replacement item will be sent for the use of the "OWNER" until the original unit is returned. The replacement item shall be at no charge to the "OWNER" while the warranty is in effect, including the transportation cost.

1.06 PATENTS

"BIDDER" will indemnify, save harmless and defend the "OWNER" from and against any and all suits, actions, legal proceedings, claims, demands, damages, costs, expenses, and attorney fees incident to any infringement or to any claimed infringement of any patent or patents in the manufacture and sale, or either thereof, of the articles or materials covered by this purchase, or in any way connected therewith or with the use thereof by "OWNER"; provided, however, that "OWNER" may be represented in any such suits, actions, or legal proceedings by attorneys of its own selection at its own expense.

1.07 BID

The "BIDDER" warrants that prices, terms, and conditions quoted herewith and listed on the bid sheets shall constitute his bid and shall be firm for acceptance for a period of ninety (90) days from the date of the bid opening.

The "BIDDER" shall submit his bid on the bid sheet provided in these specifications. On the first bid sheet, a sub-total amount for Items A, B, & C shall be inserted by the "BIDDER". On the following itemized bid sheets, the "BIDDER" shall complete an itemized price list on all of the equipment required for both the internal inspection truck and grouting equipment. The "OWNER" reserves the right to reduce the base bid amounts by any of those prices listed on the itemized bid sheet. The "BIDDER" shall also attach to his bid sheet a fixed price list of all of the grouting chemicals and required cleaning agents for properly maintaining the grouting equipment. These prices shall be in full effect during the duration of the warranty of the truck. The bids shall be received at the Purchasing Department, Room 470, City-County Building, One Main Street, Fort Wayne, Indiana, 46802 until 11:00 A.M. local time, May 3, 1977.

The bids will be reviewed for recommendation of purchase for the "OWNER" by the Water Pollution Control Engineering Department. If any information is necessary regarding these specifications, the "BIDDER" shall contact Philip R. Boller, Chief Engineer, Water Pollution Control Engineering Department, Room 700, City-County Building, Fort Wayne, Indiana 46802 by calling (219) 423-7061.

1.08 TERMS OF PAYMENT

The terms of payment are NET CASH in exchange for the complete unit herein specified and approved by the "OWNER".

Upon completion of 50% of the assembly of the complete unit, the successful "BIDDER" may submit to the "OWNER" a request for a 50% partial payment. the "OWNER" will make payment on this request based upon an approval to do so by the Chief Water Pollution Control Engineer.

1.09 DELIVERY

The "OWNER" is interested in obtaining the completed unit described herein in the least amount of time. Thus, the "BIDDER" shall submit and guarantee within the bid a delivery date of the complete internal inspection and grouting unit as described herein. If this delivery date is not met, liquidated damage of \$100 per calendar day shall be paid by the "BIDDER" to the "OWNER". The complete unit shall be field tested by the "BIDDER" immediately after delivery. Any system or piece of equipment not functioning properly will establish the unit unacceptable by the "OWNER". The submitted delivery date will be considered in the award of the bid.

1.10 TRAINING

The "OWNER" recognizes that the complete internal inspection and grouting unit described herein is a highly sophisticated and specialized working unit. Proper training by expertly qualified instructors of all equipment and systems described herein shall be required of the successful "BIDDER". The minimum amount of training is considered by the "OWNER" to be as follows:

A. Classroom Training

Eight (8) hours of formal classroom training during which all the systems and component parts of these systems described shall be identified, the operation and maintenance and safety features of all of these parts and systems shall be explained in detail, and all safety procedures which should be followed in case of an accident shall be explained.

B. Field Training

Sixteen (16) hours of field work during which the internal inspection and grouting unit shall be operated in a sewer line chosen by the "OWNER". During this minimum sixteen (16) hour training period, all of the systems of the internal inspection and grouting unit shall be operated first by the expertly qualified instructors of the "BIDDER" and then by employees of the "OWNER" with the guidance of the "BIDDER'S" instructors.

1.11 OPERATION AND MAINTENANCE MANUALS

One complete bound Operations and Maintenance Manual, written specifically for the equipment described herein, shall be furnished in full with the bid. This manual shall contain all of the recommended operation and maintenance procedures for the systems and methods of use of the equipment. This manual

1.11 OPERATION AND MAINTENANCE MANUALS - continued

shall also contain an equipment list and price list of all system components to be supplied and the address of the parts and service facility nearest to the "OWNER". (See paragraph 1.05)

When the complete internal inspection and grouting unit is delivered, five (5) additional sets of bound Operations and Maintenance Manuals shall be furnished. In addition to the information required in the Manual supplied with the bid, these five (5) additional manuals shall have copies of all of the approved shop drawings for the complete internal inspection and grouting unit described herein, and an updated price list of all individual component parts.

1.12 INTERNAL INSPECTION LOGS

A looseleaf binder shall be furnished containing 100 copies of an inspection log. The log shall be designed to provide a written record of the condition of the line at the time of inspection, including space for date, footage, manhole location, special notes, signatures and title block.

1.13 BID AWARD

The "OWNER" reserves the right to reject any and all bids. Major exceptions to these specifications herein, or failure to submit requested information, will be considered a cause for rejection of the bid. The successful bid will be awarded to the lowest and best bid submitted.

1.14 TRADE-IN UNIT

The "OWNER'S" trade-in internal inspection unit shall be available for inspection by appointment between the hours of 8 AM and 5 PM, Monday through Friday. For an appointment, contact the Water Pollution Control Engineering Department (219) 423-7061 at least 48 hours in advance.

The "OWNER" reserves the option to trade in the existing internal inspection unit. The decision regarding the trade-in will be made by the "OWNER" at the time the bid is awarded.

1.15 INFORMATION TO ACCOMPANY BID

Each "BIDDER" shall furnish the following information with his bid:

- A. A list of at least ten (10) Owners within the same general climatic conditions of Fort Wayne, Indiana, who have purchased from the "BIDDER" an internal inspection and grouting unit which is similar to the unit described herein. Three (3) of the Owners on this list must be municipalities.
- B. The location of the parts and service facility including address, telephone number and manager's name.
- C. Guaranteed delivery date.

1.15 INFORMATION TO ACCOMPANY BID - continued

- D. One complete bound Operation and Maintenance Manual, and three (3) copies of the Internal Inspection Logs.
- E. Photographs inside and outside of the complete unit identical to the one to be supplied.
- F. Complete system specifications and diagrams showing actual layout in the truck.
- G. Literature describing all major components of the unit.
- H. Completed bid sheets.

1.16 SHOP DRAWINGS

Since the actual size and quantity of equipment to completely outfit an internal inspection and grouting unit varies from manufacturer to manufacturer, the "OWNER" shall require that before construction begins by the successful "BIDDER", shop drawings shall be submitted to the "OWNER" for approval. The items for which shop drawings shall be submitted are listed in the following sections of the specifications.

The "OWNER" shall complete the review of the submitted shop drawings in two (2) weeks or less.

ITEMIZED

BID SHEET

for

INTERNAL INSPECTION AND GROUTING UNIT

CITY UTILITIES

CITY OF FORT WAYNE - INDIANA

- A. Itemized Equipment for the base bid on the Internal Inspection Truck:

ITEMIZED
BID SHEET
for
INTERNAL INSPECTION AND GROUTING UNIT
CITY UTILITIES
CITY OF FORT WAYNE, INDIANA

B. Itemized Equipment for the base bid on the Grouting Equipment:

Description

Price List

BID SHEET

for

INTERNAL INSPECTION AND GROUTING UNIT

CITY UTILITIES

CITY OF FORT WAYNE, INDIANA

<u>Description</u>	<u>Amount</u>
A. Base bid of internal inspection truck (per Sections II, III, and V of these specifications)	_____
B. Base bid of grouting equipment (per Section IV of these specifications)	_____
TOTAL BASE BID	_____
C. Less Trade-in allowance for existing T.V. Truck (per Section VI of these specifications)	_____
TOTAL BASE BID LESS TRADE-IN	_____

The fixed prices for the grout chemicals and cleaning agents which will be ordered during the warranty period are attached.

The BIDDERS guaranteed delivery date for this unit complete is:

The _____ day of _____, 1977.

SECTION II - VAN-TYPE TRUCK REQUIREMENTS

2.01 CHASSIS SPECIFICATIONS

The minimum chassis specifications are as follows:

Year of Make	1977
Gross vehicle weight	14,000 lbs.
Front G.V.W.	4,000 lbs.
Rear G.V.W.	10,000 lbs.
Wheel Base	148"
Tires - Front	7.50 X 17 - 10 ply truck type tires
Tires - Rear	Dual 7.50 X 17 - 10 ply truck all weather tires
Axle - Front	FA-28 rating - 4,000 lbs.
Axle - Rear	RA-20 rating - 10,000 lbs.
Shock Absorbers	Front and rear
Brake	Hydraulic dual self-adjusting power assisted
Transmission	Manual 4-speed
Clutch	12" - 15 spring
Springs	Heavy Duty Front and Rear
Steering	Power assisted
Engine	8 cylinder - 345 cu. in.
Fuel Tank	23 gallon - left side mounted
Cooling System	Closed 20 quart capacity - permanent type anti-freeze -20° Fahrenheit
Battery	12-volt 61 AMP - HR.
Alternator	12-volt 61 AMP
Gauges, switches, lights, signals	Directional signals, electric horn, 4-way flasher, clearance lights, reflectors, safety lights, front park and turn lights, AMP, Temperature and oil gauges, front and rear brake lights

2.02 BODY SPECIFICATIONS

The minimum body specifications are as follows:

Materials:	1/8" thick heat-treated aluminium alloy side panels, separate skirts, rubrails, rear panels and floor panels
Windshield:	Tinted safety plate glass
Side Doors:	One each side 31" wide with adjustable windows in each
Bumpers:	Steel front and rear, rear bumper shall serve as a step. The top being 1/8" thick steel diamond safety plate 6" wide
Windshield Washers & Wipers:	Dual with heavy-duty electric motor and washers
Lighting:	All I.C.C. requirements for lights and reflectors, etc. shall be met
Rear Doors:	38" wide - double leaf
Insulation:	1-1/3" fiberglass to be installed on complete body or equivalent spray foam
Undercoating and Rust Proofing:	Required
Body Construction:	Aerotype (free of posts & ribs)
Floor Height:	28" - 30" above ground
Key Locks:	3 required; 2 for side doors and 1 for back door all with same key (3 sets of keys furnished)
Driver's Seat:	Foam rubber, adjustable with seat lock and seat belt
Passenger Seat:	Foam rubber, collapsible to allow access to control room, with seat lock and seat belt.
Hose and Cable Access Doors:	One 8" x 6" door and one 10" x 16" door shall be provided in the left rear panel of the truck body to allow passage of the TV, communication lines, and grout and airhoses. One 8" x 6" door shall be provided in the right rear panel of the truck body to allow passage of the power winch cable. All three doors shall be equipped with 4-way Delrin Rollers, and inside locking device
Mirrors:	Dual rearview 6" x 16" west coast type
Cigar Lighter:	Required

BODY SPECIFICATIONS CONTINUED

Load space: 16' long x 7 $\frac{1}{2}$ " wide x 6'8" high

Equipment Compartments: One aluminum compartment required to be built into the body of the truck on each side behind the rear wheel wells, approximately 45" long, 26" wide and 24" high. Each compartment shall be equipped with a ventilating hinged aluminum door and locking latch, with same key as used on side and back doors

Safety Lights: Two 12,000 candle power, amber strobe lights mounted on roof. One forward and one rear - 12 V DC operation.

Exterior Paint: One coat of primer and one finish coat of white paint of 4 mil. thickness. All trim shall have one additional coat of black

Lettering: All lettering shall be done by the "OWNER"

2.03 INTERIOR COMPARTMENTS AND OUTFITTING

A. Scope

It is the intent of these specifications to secure for the "OWNER" a van-type truck which shall be divided into three compartments: the front compartment shall be the driver's compartment, the middle compartment shall be the control room, and the end compartment shall be the equipment room. These compartments shall be outfitted with the successful "BIDDER'S" equipment in such a way as to provide the optimum in the ease of operation for the operator and the optimum in convenience and quantity of storage space. The successful "BIDDER" shall submit for approval by the "OWNER" shop drawings of the placement of equipment and of the storage space in both the control room and the equipment room before the unit can be assembled.

B. Driver's Compartment

A wall shall be installed at the rear of the driver's area, with an opening for a passage door to control room. This wall shall be paneled with $\frac{1}{4}$ inch AD grade plywood. All other features of the driver's compartment shall be as equipped by the body builder.

C. Control Room

The control room shall be 5 feet long, 6 feet 8 inches wide and 6 feet 8 inches high. The walls shall be finished with a dark 3/16 inch thick factory - finished plywood. The ceiling shall be finished with a white factory - finished ceiling material. The floor shall be covered with a vinyl asbestos floor tile 1/8 inch thick. The color and design of the floor tile shall be approved by the "OWNER" when the shop drawings are submitted by the successful "BIDDER". The floor tile shall be installed with a water proof adhesive and the floor tile shall be able to withstand a general cleaning with a natural soap.

A wall shall be installed at the rear of the control room with an opening for a passage door to the equipment room. The fronts of the TV monitor and all control equipment shall be mounted on this wall. A desk shall be installed below the TV monitor and control equipment. The desk shall contain three drawers and shall have a formica top and edges. Storage space shall be built around the TV monitor and control equipment and shall have doors opening into the control room. The actual size and location of the doors shall be approved by the "OWNER" when the shop drawings are submitted by the successful "BIDDER".

A storage type bench seat 36 inches long by 15 inches wide with a removable cushion shall be installed along the wall separating the drivers compartment from the control room. A seat belt shall be installed for this seat.

A swivel type seat shall be supplied for the operator and shall be attached to the floor in front of the desk.

A storage area 18 inches deep shall be installed along the entire right hand wall of the control room. This storage area shall consist of a combination of drawers and shelves $\frac{1}{2}$ inch thick fronted by doors. There shall be approximately 6 drawers and 3 shelf areas fronted by doors. The actual size and location of the drawers, shelves and doors shall be approved by the "OWNER" when shop drawings are submitted by the successful "BIDDER". All of the doors and drawers in the control room shall be completely finished and shall have mechanical latches to hold them securely closed while the vehicle is in motion.

There shall be an interior passage door in the front and backwalls of the control room. Each door shall be completely finished and have lock type doorknobs with the same key. Each door shall be 24 inches wide by 78 inches high, hollow slab type, and have factory-finished veneer on each side. The door in the front wall of the control room shall be hinged on the right side and shall open into the control room. The door in the back wall shall be hinged on the left side and shall open into the equipment room.

D. Equipment Room

The equipment room shall be 10'8" long and 7' wide. The walls shall be finished with 1/4 inch AD Grade plywood liner painted splatter gray with an epoxy type flat paint. The ceiling shall be finished with 1/4 inch AD Grade plywood liner painted white with an epoxy type paint. The floor shall be 1/8" aluminum diamond plate. All of the ceiling, wall and floor joints shall be caulked with a flexible sealer.

A storage cabinet shall be installed along the common wall of the control room and equipment room to house the TV monitor and control equipment. Doors shall be installed on the equipment room side of this storage cabinet to provide easy access to the TV monitor and control equipment. A drawer approximately 24" high, 18" wide and 30" long shall be installed in the bottom of this cabinet. The actual size and location of the drawer, shelves and doors shall be approved by the "OWNER" when shop drawings are submitted by the successful "BIDDER". This cabinet shall be completely finished and painted the same as the walls of the equipment room and shall have mechanical latches to hold the doors and drawers securely closed while the vehicle is in motion.

A work table shall be installed above the left side rear wheel well. This table shall be approximately 2' wide, 3' long and 3' above the finished floor. This table shall be

INTERIOR COMPARTMENTS AND OUTFITTING CONTINUED

strong enough to support 250 pounds, the top and edges shall be covered with Formica, and this table shall be hinged to the left wall of the Equipment room. Two supporting legs shall be hinged to the table. The table and support legs shall be constructed in such a way as to use a minimum amount of space when folded up against the left wall of the equipment room by means of a mechanical latch. The actual dimensions and placement of this table shall be approved by the "OWNER" when shop drawings are submitted by the "BIDDER".

PLACEMENT OF EQUIPMENT AND CONTROLSA. Scope

It is the intention of these specifications to give the "BIDDER" the location the "OWNER" would like the equipment and controls placed. The actual location of all equipment and controls shall be approved by the "OWNER" after the shop drawings are submitted by the successful "BIDDER".

B. Control Room

The controls for the TV monitor, video tape recorder, power winches, air test and grouting equipment shall be mounted above the desk in the control room within easy reach of the operator. The actual placement of these controls shall be approved by the "OWNER" when shop drawings are submitted by the successful "BIDDER".

C. Equipment Room

The order of the equipment along the right side of the equipment room from front to back shall be as follows: Water storage tank, hot water heater, grout tanks and grout pump. The grout pump shall be installed directly above the equipment storage compartment. The reel for the power winch cable shall be mounted on a metal framework above the grout pump. The ventilation fan shall be installed above the grout tanks in the wall approximately 70 inches above the finished floor. The propane fuel storage tank shall be mounted under the finished floor of the vehicle as close to the hot water heater as possible.

Along the left side of the equipment room the air reserve tank shall be installed on the wall above the wheel well. Above the left side equipment storage compartment the grout hose reel shall be installed. The TV cable reel shall be installed on a metal framework above the grout hose reel.

The gasoline engine-powered generator and air compressor shall be installed in the left side equipment compartment.

SECTION III - INTERNAL INSPECTION SYSTEM

3.01 TV CAMERA

The camera shall be a self-contained, sturdily made unit designed specifically for operation in sanitary sewers. Converted studio cameras having beam target and focus controls located at power control unit above ground will not be accepted. Circuit board modules shall be epoxy glass, easily removed for repairs, specifically engineered for sewer work and shall be capable of sustaining three successive shocks of 25 Gs in each of three axis with duration of 11 ± 1 mill sec.

Band width of pre-amp and video amplifier shall be in excess of 8.5 mega hertz. (The use of only video range signals, free from interference from externally generated RF signals eliminates the need for RF suppressors.) The composite video signal output shall be maintained at a minimum of 1.0 V through 1000 feet of cable. The horizontal resolution shall be a minimum of 650 lines, the scanning shall be 525 lines, 30 frames per second, interlaced 2:1.

The camera shall have a vidicon target circuit to replace the manual iris control. It shall automatically compensate for light and have sensitivity to return a good picture from illumination on the vidicon face from 0.1 to 10,000 foot candles. It shall provide 100% video at 200 to over 1000 foot candles, and 75% at 20 to 200 foot candles according to requirements of EIA Standards and shall have no image shading at 10 foot candles of illumination. Geometric distortion of the image shall not exceed 2%.

The optical system acceptable shall consist of f/1.4 or f/1.8 wide angle lens with optical angle 53° to 64° . The vidicon tube shall be electrically focused through an electro-magnetic current circuit. In addition to the electronic vidicon focus, the camera shall be equipped with an externally controlled manual focus and iris to provide maximum clarity when viewing various sized pipe. It shall not be necessary to open the camera case to adjust the manual focus. The camera shall have a horizontal and vertical sweep failure circuit designed for positive protection of the vidicon under conditions of sweep or cable failure, and a sync generator circuit which shall be crystal controlled.

Full video bandwidths shall be provided for with no sacrifice of low frequency response. There shall be no visible streaking of the low frequency test bars when viewing a standard EIA Test Chart.

The camera shall require maximum electrical input of 22-30 V DC with current demand of 365 ma. maximum from a constant current power source.

The camera shall be mounted in a stainless steel or anodized aluminum alloy case. The basic housing shall be 3" in diameter and not to exceed 22" in length. The camera housing faceplate shall be not less than 1/4" optically ground quartz glass, to insure a distortion free image. The rear bell assembly shall be precision threaded to the camera housing and "O" ring sealed. The connection from the camera to camera cable shall be of the quick disconnect type. It shall consist of a

5-pin male rubber connector and a 5-pin female rubber connector. Cameras requiring threaded electronic connectors will not be considered. When complete with cable connector, the camera and connectors shall be capable of withstanding pressure in excess of 100 psi and shall therefore be completely gas explosion and waterproof. Operating temperature ranges of the camera shall be from -40° to +80° F.

All DC voltages shall be electronically regulated. The camera shall employ a current limiting voltage regulator, thus eliminating the use of a fuse. The vidicon shall employ a high sensitivity, low lag photo conductor having a high signal uniformity over its entire scanned target area and a low power "dark heater" requiring a maximum of 95 milli-ampere current.

The camera shall meet vibration spec. per MIL-STD-810B, Method 514.1, Category G, Curve AW.

The vidicon sensitivity shall be extremely high - 4,350_uA/lm (0.01 foot candles at vidicon shall give full 600 TV lines) and shall have a typical signal (output current of 500 nA. The vidicon shall be capable of being exposed to direct sunlight or extremely bright light source without damage of after-image effect. The residual signal (lag) shall be extremely low, approximately 8% of initial value of signal output current 1/20 sec. after illumination is removed.

The lighthead shall be of such design, construction and size that it can produce the proper illumination for all pipe 8" through 30" with no modification or adjustments. It shall use 30 small bulbs and draw a maximum of .2 A at 30 V DC thereby eliminating electrical shock hazard of higher voltage lights. Provisions shall be made at the power control unit for varying the light intensity, as required by line conditions. The lamps shall be plug-in type for instant replacement and reflectors shall not be required. The light housing shall be machined of anodized aluminum with no electrical contact (ground or other) between it and the camera to insure safe operation. The single unit shall be easily mounted on the camera and shall require no extra skid, mount or other device, and shall be fully protected from normal damage by the camera transportation skids. The lighthead unit when operating at maximum intensity shall be completely submersible without damage to the lamps. The lamps shall be totally enclosed to provide protection from breakage. Lights requiring more than 60 watts will not be acceptable.

3.02

TV POWER & LIGHT CONTROL UNIT

The Power Control Unit (PCU) shall provide all the necessary switches, controls, and meters for control and distribution of all electric power for the entire TV system. The PCU shall be contained in a portable steel box for protection of its components as well as for safe, easy handling. It shall have plug-in type receptacles for all interconnections between all TV system components. Except for the communications cable jacks, all receptacles and plugs shall be of the keyed and vibration-proof type to preclude incorrect connection and to prevent loose or erratic connections.

The PCU shall contain a transistorized camera power source, whose input shall be through an isolation transformer and whose output shall be a D.C. constant current type, adjustable from 300 to 1000 milli-amps. A milli-ammeter and a convenient control shall be provided on the front panel for observing the camera power output. Systems requiring additional camera controls for beam target and focus at control panel will not be considered equal. The PCU shall also contain a solid state lighthead power source, whose input shall be through an isolated variable transformer and whose output shall be a low voltage D.C. type, adjustable from zero to a maximum of 100 volts. A D.C. voltmeter and a convenient control shall be provided on the front panel for observing and adjusting the lighthead power. Input and output for both the camera and lighthead power shall have circuit breakers for safety and equipment protection, and all fuses shall be conveniently located on the front panel for easy access. Fuses for input power to both the camera and lighthead shall have indicator lights installed to show when power is "on" or "off", and to reveal tripped input circuit breakers.

An on-off switch for the entire PCU shall be provided on the front panel. A Generator Remote Start-Stop switch shall be located on the front panel. A frequency meter, 58 to 62 Hz, and an AC voltmeter, 0-150 V, shall be located on the front panel for ready observation of the electrical input power. The input power cord shall be of the three conductor (grounded) safety cord type with three pin A.C. plug.

3.03

MONITOR

The video monitor shall be a minimum 14" Kinescope. The video response shall be in excess of 800 lines in the center of the kinescope. The monitor shall be modified for operation from the gasoline powered generator and shall show no picture quality variation when the generator cycles vary from 58 to 60 cycles per second. It shall operate without picture size or brightness variations when line input is between 105V and 130V A.C., at 185 watts. The front control panel shall contain: on-off switch, brightness control, horizontal hold, vertical hold, picture height and contract. The rear control panel shall contain: 2 video input connectors, video input switch, D.C. restoration switch, focus control, horizontal protection fuse, and A.C. line fuse. The video input wire from the PCU shall be through a single shielded coaxial cable.

The video tape recorder shall be furnished complete in every detail as necessary, to provide a rugged portable unit to permanently record on video tape, any television transmission from closed circuit sewer television camera for immediate or later review, as detailed herein-after. The recorder shall be of modular design with easily serviced transistorized removable circuit boards. It shall be equipped with an audio channel for monitoring the video recording. Both video and audio signals may be recorded simultaneously or, if desired, audio may be dubbed later. Audio signal may be altered at will without disturbing the video signal.

Helical scan recording techniques shall be utilized for record and playback of composite video. Composite video signals shall be recorded by two heads.

The Videocorder shall record and reproduce in all the following operating modes: 60 cycle field frequency, random sync, 2 to 1 industrial sync, and EIA sync.

The control panel shall consist of easily identified switch positions which actuate safety interlock to insure against the possibility of accidental erasure.

The tape transport shall be completely enclosed with a dust-proof hinged cover with a glass-type faceplate for observation when mounted. Video tape shall be of the long life self-lubricating type. Tape interchangeability shall apply to all operating modes. A three digit tape position indicator for record and playback modes shall be provided.

The video tape recorder shall be approximately 12" x 17" x 12". The unit when assembled in the portable cabinet shall not exceed 20 pounds in weight. It shall have a recording time of a minimum of 30 minutes and shall use $\frac{1}{2}$ " wide longitudinally oriented tape on a $5\frac{1}{4}$ " reel. The recording speed shall be 7.5 I.P.S. The video system of the recorder shall be a horizontal resolution in excess of 300 lines with signal to noise in the video of better than 40 db. Video shall be composite standard signal with negative sync of .5 to 2 V P-P 75 ohms. The unit shall take input video signal. The output signal shall be a composite, negative sync with 1.4V P-P 75 ohms, unbalanced. The unit shall be 65 db AGC, 3.6K ohms. The unit shall be unbalanced. The unit shall be capable of simultaneously erasing and recording of the video and audio and audio tracks. It shall incorporate two video recording heads and one audio recording head. Tapes made on any Video Tape Recorder can be interchanged with tapes of other Video Tape Recorders.

A switching box shall be provided so the recorder can be controlled remotely.

The video tape recorder and adapter shall be mounted in a sliding tray in the control room. The drawer shall have a tilt down type feature for easy access.

VIDEO TAPE RECORDING SYSTEM - CONTINUED

A hand microphone shall be supplied to operate with the video recorder. The microphone shall have a ball screen to filter out outside noises. The microphone shall provide a full 90 - 11,000 Hz audio, dual impedance of 250 ohms and 50,000 ohms and be uni-directional. The microphone shall be equipped with an on-off switch, 6 ft. cable and a 1/4 inch phone plug.

The unit shall be supplied with three full reels of video tape. The tape shall be produced under rigid quality control standards. It shall also produce the highest quality picture and sound. The video tape shall be supplied on plastic reels. The unit shall also be supplied with one empty reel.

3.05

DATA VIEW

A Data View system shall be installed. The system shall display on the monitor the following information: date, job code, footage, pressure test readings and a flow direction indicator. Each of the above items shall be displayed on four separate lines. This shall be accomplished through the use of the Data View signal generator, automatic footage counter and quick test electronic readout. All data may be displayed separately or together. The information display shall be able to be moved horizontally and vertically over the face of the monitor and light intensity varied at will.

The pressure readings shall be displayed on the monitor face in tenths of pounds per square inch for accurate and reliable monitoring of the void pressure.

The unit shall be designed so that the correct footage information is always available. It shall be such that when the TV system is off the Data View footage indicator keeps track of the cable taken in or removed from the reel regardless of whether the electric power to the TV system is off or on. If the equipment is turned off and the cable is moved, when the TV system is turned back on, the correct footage shall be indicated on the monitor.

The Data View shall be mounted in a suitable metal case and shall have power consumption of 12 watts at 105 to 125 volts, 50 to 60 cycles. The information supplied by the Data View shall be capable of being recorded on the video tape system so that the information becomes a permanent record along with the pipe condition recorded during the inspection. Mechanical or audio means of placing information on the video tape after the time of inspection shall not be acceptable.

3.06

TV CABLE REEL ASSEMBLYA. TV Cable

The TV Cable shall be a 1000 foot continuous length. The cable shall be specifically designed for sanitary sewer line inspection application. The cable shall consist of one RG 59/U coaxial cable and 7 #14 AWG insulated, color coded conductors. All conductors shall have a lay pattern of approximately 6" for added flexibility and shall have stranded plastic added as filler to maintain round O.D.

A. TV Cable - Continued

The outside cover of the cable shall be black polyurethane with a nominal O.D. of less than .6"

B. TV Cable Reel

The TV cable reel shall have capacity for 1200 feet of .6 inch diameter cable, and a weatherproof slip ring assembly completely installed and connected to the above mentioned TV cable.

C. Slip Ring Assembly

The slip ring assembly shall be contained in a weatherproof cover which shall be easily removed. Connector rings shall be copper, precision ground and polished. Brushes shall be copper graphite spring loaded.

D. Connector

The connector on the camera end of the cable shall be a molded neoprene type with a waterproof plug cap.

E. Strain Relief

A polyethylene strain relief shall be attached around the TV cable and the free end shall be attached to the towing harness of the TV camera to relieve all strain on the cable connection at the camera.

F. Rewind

The TV cable reel shall be equipped with an air powered variable speed retrieve system capable of pulling 1000 feet of fully extended TV transmission cable from sewer pipe. It shall be ruggedly built and able to withstand conditions of field use.

3.07

FOOTAGE METER

The metering head shall be constructed of machined cast aluminum parts and shall consist of the necessary sheaves, wheels and guides to record the in-line movement of the television camera. A mechanical digital readout metering head shall be located at the rear of the unit. The metering head shall be equipped with an electronic counter connected to the Data View system in the control room and shall operate both forward and backward. The footage meter shall also act as a level winder.

3.08

CAMERA STORAGE BOX

A camera storage and transportation box shall be provided for the camera when it is not in use. It shall be constructed of anodized aluminum with polyurethane foam inserts designed to hold the camera securely to prevent damage in shipment. A rubber lens cover shall also be included.

SECTION IV - INTERNAL GROUTING SYSTEM

4.01 SCOPE

A complete internal grouting system shall be installed in the vehicle. The system shall include all necessary hoses, piping, fittings, connectors, controls, gauges, mixing tanks, etc., to internally grout leaks in sewers and manholes.

4.02 GROUT MATERIAL

The acceptable grout material shall be a gel type grout with a root inhibitor or an approved equal.

The vehicle shall be delivered with enough grout material to grout 100 average 8" diameter pipe joints as determined by the bidder.

4.03 GROUT PUMP

A positive displacement pump shall be furnished to pump the grout. This pump shall be capable of pumping 3 gallons per minute. All wetted parts of the pump shall be stainless steel. Each cylinder shall be equipped with a pressure gauge.

This pump shall be constructed so that an air motor kit can be installed with quick-release pins to convert the unit from manual to pneumatic operation.

This pump shall set in a stainless steel tray with a 2 inch diameter drain extending below the finished floor of the vehicle.

The pump shall be designed and located in such a manner that it can be easily removed from its location and can be used in another vehicle for other grouting operations such as sealing leaks in the walls or floor of manholes.

4.04 AIR MOTOR KIT

An air motor kit shall be furnished to provide pneumatic operation of the grout pump. The unit shall be constructed so that it can be easily added to or removed from the pump. Speed of stroke shall be pre-set and easily adjusted. Air cushions shall be built in to prevent stroke hammer and shall be self-lubricating. A 5 micron air filter element shall be attached to the unit. Aire requirements shall not exceed 4 cfm at 80 psi.

4.05 GROUT TANKS

Two (2) 40-gallon grout mixing tank assemblies shall be furnished. Each tank shall be one piece construction of corrosive resistant fiber glass reinforced plastic. These tanks shall be connected to the grout pump by a hose. This hose shall have quick acting type stainless steel fittings and a stainless steel cut-off valve. One mixing tank - hose assembly shall be red in color and the other mixing tank - hose assembly shall be blue in color.

4.05 GROUT TANKS CONTINUED

The mixing tanks shall set in a stainless steel tray with a 2 inch diameter drain extending below the finished floor of the vehicle.

Individual measuring cups, chemical scoops and mixing paddles shall be supplied with each mixing tank. Provisions shall be made to store these items near the mixing tanks when they are not in use.

4.06 AIR-GROUT HOSE REEL ASSEMBLY

A. Reel

The reel shall have the capacity to store 500 feet of Air-Grout hose and shall be equipped with a stainless steel swivel permitting the grout and air to be passed through the unit while the hose is being played out or reeled in. All wetted parts of the unit shall be stainless steel.

B. Hose

The Air-Grout hose shall be a 500 foot continuous length, 4-cavity hose 3/8 inch I.D. bonded into one unit. The inner tube of the hoses shall be virgin polyimide. The outer cover shall be abrasion resistant thermoplastic. The hose shall be rated at 500 PSI and the 4 tubes shall be of different colors to assist in making up connections.

C. Rewind

The Air-Grout hose reel shall be equipped with an air powered variable speed retrieve system capable of pulling 500 feet of fully extended air-grout hose from sewer pipe. It shall be ruggedly built and able to withstand conditions of field use.

4.07 REMOTE GROUT NOZZLE SYSTEM

A. Scope

A remote grout nozzle system shall be furnished which shall include grout hose, connections, valves, "Y" manifold and nozzle, which shall be able to complete other grouting operations such as sealing leaks in the walls or floor of manholes.

B. Hose

Two 30 foot lengths of color coded 3/8 inch I.D. grout hose shall be furnished. The inner tube of the hose shall be virgin polyimide. The outer cover shall be abrasion resistant thermoplastic. The hose shall be rated at 500 PSI. These hoses shall have stainless steel quick lock connections so that they may be able to connect to either the mixing tanks as described in paragraph 4.05 or the 4-cavity hose as described in paragraph 4.06B.

4.07

REMOTE GROUT NOZZLE SYSTEM CONTINUED

C. "Y" Manifold

A "Y" Manifold shall be furnished so that the chemicals may be properly mixed. Stainless steel valves shall be installed on the "Y" manifold to allow fluid control.

D. Nozzle

A tapered stainless steel nozzle approximately 6 inches long shall be furnished. This nozzle shall be connected to the "Y" manifold by means of a quick lock stainless steel connector.

4.08

GROUTING CONTROL PANEL

A control panel shall be furnished that is designed to give the operator all the necessary controls, gauges, etc., for pumping grout and regulating the amount of grout when used with either the remote grout nozzle system or the joint test units.

The panel shall contain a separate gauge which will indicate the pressure in each grout line after it leaves the grout pump. This panel shall also contain a control to regulate the supply of air to the air motor mounted on the grout pump.

SECTION V - MISCELLANEOUS EQUIPMENT

5.01 110 VOLT ELECTRICAL SYSTEM

A. SCOPE

The 110 volt electrical system shall be fully designed to sustain the complete electrical requirements of all components of the internal sewer inspection van-type truck. The electrical system shall conform with the national electrical code.

B. ELECTRICAL GENERATOR

The power source for the 110-volt electrical system shall be a 6500 watt alternating current gasoline powered generator. It shall be the product of a firm regularly engaged in the manufacture of gasoline powered generators. The generator shall be capable of continuously producing 6500 watts of power at 120 VAC without undue heating, wear, or vibration.

The engine shall be an air-cooled two-cylinder unit of at least 10 HP. It shall be designed to operate the generator at 60 CPS \pm 2 CPS and shall be governor-controlled to maintain those cycles under varying load conditions.

The engine shall be equipped with a 12-volt DC starting device and shall include a battery of proper size for its normal operation.

Provisions shall be made for this engine to be supplied with gasoline from the main gasoline tank.

The alternator shall have all-climate insulation drip-proof construction, and a battery charging circuit.

A remote start/stop switch for the engine shall be provided on the power control unit panel located inside the control room.

The generator shall be neatly shock mounted in the left side equipment compartment. The generator shall also be equipped with a heavy duty industrial muffler to insure quiet operation.

C. CIRCUITS, WIRING & OUTLETS

A 50 AMP breaker box shall be installed in a convenient location and all 110 V wiring shall be controlled at this point. A minimum of 8 circuits shall be installed with one breaker for each circuit.

All circuit runs shall be of 14-2 Romex with ground and shall be installed in conduit. No wiring shall be installed between the inside wood liner panels and the outside surface of the truck body. All wiring shall be placed so that there is easy access to repair and/or change.

SECTION V - MISCELLANEOUS EQUIPMENT - continued

All outlets and switches shall be grounded and set in electrical boxes. One outlet shall be installed in the control room near the operator's desk and one outlet shall be installed in the equipment room near the work table.

Provisions shall be made for disconnection of the power supply and for an exterior connection to a standard 110 volt outside power supply.

D. INTERIOR LIGHTS

In the control room one (1) 110 V AC flourescent light fixture shall be installed above the operator's desk to provide proper lighting for the operator. The switch for this fixture shall be in the control room.

In the equipment room two (2) single 110 V AC flourescent light fixtures shall be installed on the ceiling. These fixtures shall be 4 feet long and shall be installed end to end and centered both ways. The switch for these fixtures shall be in the equipment room.

E. HEATER

A 1500 Watt, fan-circulated, variable direction flow electric heater shall be installed in the control room close to the floor on the right side storage wall. The unit shall be equipped with an automatic safety switch, hydraulic action thermostat and fan delay switch.

F. AIR CONDITIONER

The control room shall be equipped with a roof mounted 6000 BTU, 110 V 60 cycle single phase air conditioning unit. The unit shall have a running amperage of approximately 10 AMPS and shall be thermostatically controlled. The unit shall be mounted through a 14" x 14" opening centered in the roof of the control room.

G. EXHAUST FAN

The equipment room shall be equipped with a two (2) speed, 110 V wall-mounted exhaust fan. This fan shall be capable of 50 CFM and 85 CFM during low speed and high speed operation respectively. Adjustable louvers shall be installed to prevent rain and weather from entering the equipment room, when the exhaust fan is not in operation. When the exhaust fan is in operation, the louvers shall be fully open.

5.02 AIR SYSTEM

A. SCOPE

The air system shall be fully designed to sustain the complete compressed air requirements of the internal sewer inspection van-type truck, including all necessary connectors, hoses and fittings.

SECTION V - MISCELLANEOUS EQUIPMENT - continued

B. ELECTRIC AIR COMPRESSOR

The system shall be equipped with an air compressor capable of delivery of 6.3 cu. ft. per minute at 125 psi. The unit shall be a single stage multi-cylinder air-cooled type. It shall be driven by an electric motor that shall supply 1½ HP. Ample power for the electric motor shall be available from the generator. The compressor shall be equipped with an automatic unloader system which shall stop the electric motor when the tank is pressurized to the operating level.

The air compressor shall be neatly shock-mounted inside the left side equipment compartment along with the generator.

C. AIR RECEIVER

The air receiver shall be an ASME rated 30-gallon, horizontal mount type capable of withstanding internal pressure in excess of 175 psi and equipped with a drain valve.

The air receiver shall be installed in the equipment room above the work table.

All of the connections on the air receiver shall be the quick disconnect type.

There shall be furnished, along with the air receiver, a quick disconnect type air gun and 20 feet of flexible air hose able to withstand internal pressure in excess of 200 psi. This air hose shall be connected directly to the air receiver.

5.03 JOINT TEST UNIT

A. SCOPE

A complete joint test system shall be installed in the vehicle. The system shall include all necessary hoses, piping, fittings, connectors, controls, gauges and joint test units to allow the operator to isolate and air-pressure test any joint of 8" to 30" diameter sewer lines.

B. JOINT TEST UNIT

The joint test unit shall consist of a mandrel, a protective type of shoe at each end, three (3) pneumatic elements, necessary manifolding for the air hose connections and the necessary towing lugs. The two (2) pneumatic end elements shall be used to isolate the joint of the sewer line in which the joint test unit is placed. The mandrel shall allow the sewage in the line to continue flowing while the joint is being tested. All of the connections shall be the quick acting type.

SECTION V - MISCELLANEOUS EQUIPMENT - continued

C. JOINT TEST PANEL

The control panel shall be designed to give the operator all of the necessary gauges and controls for the air pressure testing of each joint. The control panel shall be mounted on the rear wall of the control room as described above in paragraph 2.03-0.

The air test controls shall allow the operator to inflate the end elements simultaneously and then be able to pressurize the void area between these end elements with a regulated amount of air and to read any subsequent pressure drop in the void area.

The panel shall contain an adjustable air regulator, gauge, supply and deflating valve to control the air supply to the two end elements and a similar set of controls for the air supply to the air test section. All valves, regulators and gauges shall be clearly marked.

5.04 WATER SYSTEM

A. SCOPE

A complete pressurized water system shall be installed in the vehicle. The water system shall include a storage tank, hot water heater, L. P. gas system, and all of the necessary hoses, piping fittings and valves to allow the operator to properly clean the TV camera joint test units and all of the equipment that is in contact with sewage.

B. WATER STORAGE TANK

The water storage tank shall have a capacity of 80 gallons and shall be equipped with an "air gap" filler with a shutoff valve between the "air gap" funnel and the storage tank.

A sill cock for filling the storage tank shall be located on the outside of the vehicle. A separate valved drain shall be installed on the storage tank and be located on the outside of the vehicle.

The water storage tank shall be connected to the air system to provide for the air displacement of the water and be connected to the hot water heater.

The water storage tank shall be installed in the equipment room as described in paragraph above 2.04-C.

C. HOT WATER HEATER

A 30-gallon LPG fueled hot water heater shall be securely installed in the equipment room as described above in paragraph 2.04-0. The hot water heater shall be manufactured by a firm that normally manufactures hot water heaters.

SECTION V - MISCELLANEOUS EQUIPMENT - continued

D. PIPES, FITTINGS AND CONNECTIONS

A swivel laundry type faucet shall be installed on the wall of the right side of the equipment room under the exhaust fan. Both hot and cold water lines shall be installed from the hot water heater and water storage tank respectively to this faucet. This faucet shall have a standard hose thread at the end to allow connection of a standard garden hose.

All water lines shall be braid hose, $\frac{3}{4}$ " I.D. with screwed fittings. All necessary cut-off, pressure-temperature relief and bleed valves and fittings shall be installed.

The complete water system shall be hydraulically tested to 100 psi.

E. L. P. GAS SYSTEM

A complete L.P.G. System shall be installed in the vehicle to provide gas for the hot water heater. A 25 lb. L.P.G. tank shall be permanently installed under the floor of the equipment room as close to the hot water heater as possible.

All of the necessary valves, regulators, pressure gauges, hoses, piping and fittings shall be installed in accordance with all of the applicable National, State, and Local codes and shall be placed in such a way as to allow the operator easy access to refill the tank.

5.05 PHONE SYSTEM

A 3-station head-chest type sound powered phone system shall be supplied with 1000 feet of communication cable installed on a metal reel with stand.

The head-chest sets shall be weatherproof with "open microphone" to afford "hand free" communication between the three stations. Each head-chest set shall have 10 feet of cable with connector installed.

A junction box shall be installed in the equipment room with three mating connectors to interconnect the three stations.

A socket shall be installed in the control room for the operator's head-chest set. This socket shall be connected to the junction box.

Metal mating connectors shall be installed on all cables and head-chest sets. One 25 foot communication cable extension shall be furnished complete with proper connectors.

SECTION V - MISCELLANEOUS EQUIPMENT - continued

5.06 TOWING ASSEMBLY

A. SCOPE

The towing assembly shall consist of two electric winches with stainless steel cables, invert pulleys and all other equipment necessary to pull the television camera and other equipment through the sewer line in such a way as to have a minimum amount of strain and wear on the component parts.

B. ELECTRIC WINCH AND CABLE

Two electric winches shall be provided. Each winch shall be capable of pulling in excess of 2000 pounds and shall have a maximum retrieval rate in excess of 175 feet per minute. Each winch shall be supplied with a remote control clutch device so that the winch may be disengaged and the spool put in a free wheel position from the monitoring stations. Also the winches shall be supplied with a power driven, automatic leveling device to prevent the cable from randomly rewinding on the cable spool, and shall have a capacity for 1000 feet of 1/8 inch diameter stainless steel tow cable.

The power for the winches shall be from the supplied generator. Each winch shall be controlled from the control room and shall have variable speed to allow the operator to properly inspect the sewer line and to stop the TV camera unit anywhere within the sewer line.

The winches shall be designed for quick setup over a manhole and shall provide for connection from the winch to the invert pulley and extension pole assembly. Each winch shall be mounted and supplied with two (2) wheels for easy movement between manholes. When in operating position, the winch shall set firmly on its legs and shall not depend on the wheels for support. In the operating position, each winch shall have pulleys attached to the frame for directing all the necessary cables down the manhole.

Each winch shall be supplied with a continuous stainless steel cable 1/8 inch in diameter, 1000 feet in length and have a breaking strength in excess of 2000 pounds.

C. POWER WINCH CABLES AND REEL

The power winch cables shall be 10 gauge wire properly insulated for rugged outdoor use and shall be complete with all necessary connectors. The power winch cable for the far winch shall be a continuous cable 700 feet in length. The power winch cable for the near winch shall be a continuous cable 25 feet in length.

A cable reel to store the power winch cable shall be supplied and shall be placed in the equipment room, as described in Section 2.04-C. This cable reel shall have a hand crank rewind and shall have a capacity of 700 feet of 10 gauge wire.

SECTION V - MISCELLANEOUS EQUIPMENT - continued

D. INVERT PULLEYS AND EXTENSION POLES

Two sets of invert pulleys and extension poles shall be supplied. Each invert pulley shall be designed for quick solid installation in various sizes of sewer pipe and various built manholes from above ground. The pulleys shall be constructed of aluminum in order to be light in weight and shall have corrosion-resistant steel axles. Each pulley shall have sheaves to carry all of the cables. The minimum bend radius of the TV cable sheave shall be 6 inches.

The extension poles shall be supplied for inserting the invert pulleys in the sewer line from above ground. The extension poles shall be constructed of one (1) inch diameter galvanized pipe with a quick lock assembly consisting of compression spring and twist lock type connectors. Each set of extension poles supplied shall be for operation in manholes up to 20 feet deep.

5.07 SEWER PLUGS

Sewer plugs shall be furnished for 8, 10, 12, 15, 18, 21, 24, and 30 inch diameter sewer lines. These plugs shall be designed for ease in handling and installation in standard manholes. The plugs shall be of a pneumatic expandable rubber sealing element type. All plugs shall be furnished with connectors for securing on either end and shall have the capacity of being set from above the ground.

A hand pump and a 25 foot length of hose shall be furnished for inflating and deflating the plugs from above the ground. All necessary equipment shall be included that is needed to place a sewer plug at a depth of 20 feet including poles, connectors, fittings, etc.

5.08 EQUIPMENT COMPARTMENTS

The left side equipment compartment shall be completely insulated with a minimum of a 2-inch layer of Fiberglass insulation to reduce the noise level by 75%.

Provisions shall be made in the right side equipment compartment to store all of the invert pulleys and extension poles as described above in Paragraph 5.06-D.

5.09 POLAROID CAMERA ASSEMBLY

A. SCOPE

A Polaroid Camera shall be furnished and mounted so that photographs may be made of the face of the TV monitor.

B. POLAROID CAMERA

A Polaroid Camera shall be supplied to photograph the face of the monitor. The camera shall have a metal body with a standard tripod mount, view-finder, electronic timer, triplet lens, and electronic eye to adjust for varying brightness of monitor without any adjustment on lens. Camera shall use film pack with ASA speed of 3000.

SECTION V - MISCELLANEOUS EQUIPMENT - continued

C. CLOSE-UP LENS

A close-up lens and viewfinder attachment shall be furnished for the above described Polaroid Camera to photograph subjects from 9 to 15 inches.

D. MOUNTING BRACKET

A mounting bracket and pivoting arm designed to receive the Polaroid Camera described above shall be attached below the TV monitor. This assembly shall be designed to properly position a Polaroid Camera in order to photograph the screen of the monitor. The pivoting arm shall have a centering device to locate the Polaroid Camera in its proper position.

5.10 TV CAMERA SKID ASSEMBLY

A skid assembly shall be furnished which shall consist of a TV camera carrier with extensions and runners designed to enable the camera to be drawn through the sewer line near the longitudinal axis of the sewer line. The carrier shall be of cast aluminum and shall have a shock absorbent lining for protection of the camera. The runners shall be designed to enable the unit to move over offsets in the line and provide attachment for the towing winch cable and for attachment of towing cables.

Top runners shall be provided to protect the camera and light. The runner extensions shall provide adjustments for use in 8" through 30" sewer line sizes. All parts shall be of such material and finishes to afford protection against corrosion. The complete skid assembly shall be packaged in a metal carrying case.

5.11 SAFETY EQUIPMENT

The vehicle shall have the following items installed as required by the Department of Transportation:

- A. ICC Triangle Emergency Kit
- B. Fusee (3) with holder
- C. First Aid Kit

5.12 MAINTENANCE TOOL BOX

A metal tool box shall be furnished containing all of the tools normally required for routine operation and maintenance of the equipment supplied.

This shall include needle-nose and combination pliers, flat, and philips screw drivers, hex nut drivers, pipe, allen, and adjustable wrenches, hose fitting block set, and retractable knife with extra blades.

5.13 CABLE REPAIR KIT

A cable repair kit shall be furnished to make repair of the light break-out assembly. The kit shall contain cable connector, splicing kit, connector seal and instructions with schematics.

SECTION VI - EQUIPMENT LIST OF OPTIONAL TRADE-IN TRUCK

- TRUCK -

Make: GMC
Year: 1970
Load Length: 14 Feet
Transmission: Manual 4-Speed
Engine: 8 Cyl. 350 C.I.

- EQUIPMENT -

<u>Quantity</u>	<u>Item</u>
1	Sewer Camera
1	Submersible TV Camera Lighthead & Bulbs
1	Transistorized Monitor CKD14 - Conra
1	TV Power & Light Control Unit
1	Video Tape Recorder Sony EU-300
1	TV Cable Reel
950± Feet	TV Transmission Cable with connecting Plugs & Cables
1	Footage Meter
1 Set	Camera Skids for 8" - 30" Pipes
1	Power Winch with Cable
2	Cable Invert Pulleys with Extension Poles
1	Gas Powered Generator with Elec. Start - 4000 watt
1	Power Inverter 500 FC
1	Photo Camera Mount
1	Polaroid Camera #450 with #563 Close-up lens
1	Air-Conditioner Unit
1	Heater - Electric
2	Hand winches with Cable
1	Sound Power Phone Head Set
1	Communications Cable Reel with Cable

per TITLE OF ORDINANCE SPECIAL ORDINANCE - CITY UTILITIES PURCHASE ORDER #9038 - PER BID REF #423

DEPARTMENT REQUESTING ORDINANCE BOARD OF PUBLIC WORKS

S-77-07-17

SYNOPSIS OF ORDINANCE CITY UTILITIES PURCHASE ORDER #9038 TO CUES, INC. IN AMOUNT
OF \$41,670.00 FOR ONE INTERNAL T. V. INSPECTION AND GROUTING UNIT FOR S. S. E. S. PRO-
JECT, WATER POLLUTION CONTROL ENGINEERING DEPARTMENT IN AMOUNT OF \$41,670.00

TWO BIDS SUBMITTED, THIS BEING THE LOWEST

(SEE ATTACHED MEMORANDUM)

EFFECT OF PASSAGE ACQUISITION OF INTERNAL INSPECTION AND GROUTING UNIT USED IN
SEWER LINE EXAMINATIONS. AID IN EVALUATING SEWER PROBLEMS.

EFFECT OF NON-PASSAGE INABILITY TO TROUBLE-SHOOT SEWER LINES WITH PROBLEMS, RESULTING
IN MORE MAINTENANCE PROBLEMS

MONEY INVOLVED (DIRECT COSTS, EXPENDITURES, SAVINGS) \$41,670.00 FROM WPC UTILITY

ASSIGNED TO COMMITTEE

C. Jay Walker